ISBN: 978-989-8704-55-9 © 2024

VIRTUNITA: ENRICHING UNIVERSITY EXPLORATION THROUGH MOBILE LEARNING WITH A GAMIFIED VIRTUAL TOUR

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ABSTRACT

This study presents an innovative approach to promoting the international attractiveness of the University of Turin (UniTo) through synergy with the University of the West Timișoara in the "UNITorientA" project. In particular, the focus is developing a gamified virtual tour to offer students an interactive immersion in university spaces. Mobile technology plays a central role, enabling students to explore university environments and access multimedia content via personal devices. In this context, mobile learning emerges as a critical element in enhancing the learning experience by expanding access to information and promoting student mobility. The present study, conducted in collaboration between UniTo's Department of Philosophy and Educational Sciences and the University of the West of Timișoara, aims to explore how the convergence of mobile technology and virtual tours can significantly contribute to the knowledge and experience acquisition process of university students, highlighting the transformative potential of technology.

KEYWORDS

Mobile Learning, Virtual Tour, Gamification, University Students

1. INTRODUCTION

Nowadays, many operations are supported by technologies revolutionizing how we explore the world around us. The pandemic has forced a profound change in educational institutions, which have had to adapt to continue with distance learning-educational activities (Toquero, 2021). Emergency Remote Education (Mobo, 2020; Morgan, 2020) highlights the shift from "in-presence" and "distance" teaching, resulting in the deployment of those who argue for a loss of student learning and those who emphasize the possibility of reflecting, rethinking the role and spaces of digital, but also the potential, through conscious and competent use of digital educational technologies (Oliverio, 2020). Moreover, the latter has revolutionized how we explore the world around us, a change reflected in the digitization of products and services and the virtualization of everyday consumption experiences, such as the museum and institutional sector (Calveri & Sacco, 2021). Indeed, the use of technology has had a significant impact on the learning process and the development of teaching techniques (Coskun-Setirek & Tanrikulu, 2021; Lee & Hsu, 2021). This form of learning, mobile learning, combines universal communication technology and advanced user interfaces (Sharma & Kitchen Al-Hamad et al., 2021) by facilitating access to content. Users are only required to have a mobile device equipped with an Internet connection to access distance learning spaces (AlMajali & Masa'deh, 2021). Research shows that mobile learning positively affects learning in terms of strategy seeking, peer collaboration, and motivation toward learning (Bernacki et al., 2020). Today, more than ever before, the use of mobile learning is complemented by the use of virtual or augmented reality tours that enhance the learner experience. Virtual tours are becoming an excellent teaching approach to increase knowledge about realities perceived as distant to the learner. Virtual tours have become very important in heritage enhancement, educational, and orientation contexts, especially during the pandemic. The use of tools such as 360-degree imagery (Susanti, 2016), for example, show that it is possible to enhance the sensory and cognitive experience of people, who can very easily connect to media content using their device and explore virtual environments of all kinds (Argyriou et al., 2020).

Starting also from studies in education (Oliveira et al., 2023) and in virtual tours for tourism (Wei, Zhang, Wuang, 2023) on gamification, i.e., the use of game mechanisms to non-game contexts, it plays a key role in keeping user motivation high.

A virtual and gamified journey carried out within universities is illustrated here. These tools provide an extraordinary opportunity to explore university campuses and all their facets from anywhere globally, facilitating access to both domestic and international students eager to explore options and evaluate campuses akin to their academic careers (Nugraha, 2017).

2. RESEARCH DESIGN

The present study began in March 2023 and is still ongoing and is part of a larger research project aimed at enhancing the international dimension and promoting UniTo's educational offerings through the development and strengthening of research and teaching networks. The synergistic work was carried out in collaboration with an academic partner based in Romania, specifically at the University of the West in Timișoara. The main objective involved implementing a gamified virtual tour to improve academic orientation actions for domestic and international students not yet enrolled in the university and/or belonging to the United Alliance (Universitas Montium). A gamified virtual tour was constructed that would present the places of student habitation, attracting and guiding the visitor's gaze in order to be able to interpret and rework the content, extending it beyond the tour (Panciroli, & al. 2022, p.251).

2.1 VirtUniTa: A Virtual Tour of The University

This initiative is part of an academic landscape increasingly influenced by student mobility and evolving technology. Various mobile learning projects have shown promising results, such as environment simulation (Klopher & Squire, 2008) and design literacy (Matthews, 2010). Mobile media, virtual and augmented reality, can combine the advantages of educational video games with place-based learning (Squire & Jan 2007). Mobile devices may be particularly well suited for creating educational experiences in informal settings (Gagnon, 2010; Squire, 2009). However, it is important to delve into how students interact with these learning experiences and how they are designed (Squire, 2009). Information technology is increasingly being used to enrich the communication of information; in fact, whatever the context, alongside the traditional poster, there are codes to be activated to access additional multimedia content (audio, video, hypertext, three-dimensional), enriching the individual's opportunity for deeper learning (Orlandi, & al. 2014). Among the innovations of recent years are virtual tours, which rest their foundation on a technology developed by Apple dating back to the mid-1990s (Quicktime Vr) and now enhanced by the peculiarities of the available devices (Di Marino, 2018). The increased available hardware and the greater simplicity of software have seen wide-spectrum deployment through three-dimensional reconstructions and explorable environments. (Zaccarini, 2013).

In the following paragraphs, we will discuss the creation of the VirtUniTa, which takes the form of a pilot project carried out by the Department of Philosophy and Educational Sciences in Turin in collaboration with the Department of Social Sciences at the University of Timișoara that aims to create a gamified virtual tour that offers innovative immersion in university spaces, highlights how mobile technology revolutionizes students' access to information and learning experience. Student mobility, enhanced by advanced technological devices, thus becomes a critical element of acquiring knowledge and experiences, in line with Sharples et al.'s (2007) considerations on the potential of technology in transforming learning.

The project starts with the following research question: What is the potential of virtual tours applied to the orientation of pre-college and college students in the field of education science?

2.2 Aims

The objectives of the research were:

- To develop an interactive gamified virtual tour to expand access to information to enable students to explore university environments' multimedia content through their devices virtually.
- Use technology to promote student mobility by expanding the learning experience and enabling students to discover university options flexibly.

2.3 Methods and Tools

The creation of the virtual tour for mobile learning involved using two fundamental tools for its construction: the 360° Ricoh Theta camera and the Thinglink program. The stages of realization of the project can be described in the following list:

- Identification of information about places and services: services and places essential to university life, including academic buildings, libraries, study rooms, administrative offices and research laboratories, residence halls, university cafeterias, sports centers, parks, green areas, and city curiosities are brought to the fore.
- Storytelling design: Prior to the design, it was decided to create a story, starting with the creation of a guiding character, both on the United and Timișoara sides, to focus on emotional involvement on the part of the participant. The story also conveys the content by following a more elastic and light-hearted mode, helping the user to maintain high motivation toward the task.
- Design of the game flow and play activities: Several levels and a sequential flow were implemented to encourage the player to solve the puzzles in one room to gain access to the next.
- Multimedia materials were created: 360-degree images of the university spaces and neighboring places of interest to university life, and videos with helpful information for students were created.
- The photographs and videos were implemented within the ThingLink platform. The tour pages include the navigation menu, icons for the menu and places of interest, and a gallery button.
- Verification and evaluation: An initial evaluation will be conducted with a small group of students from the University of United and Timișoara who will evaluate the product regarding the tour's technical and content dimensions. They will be given evaluation grids so that they can follow precise criteria. A second evaluation phase will involve the student players administering satisfaction questionnaires.

Figure 1. The virtual tour begins. The user can view the University of Turin or the University of Timișoara

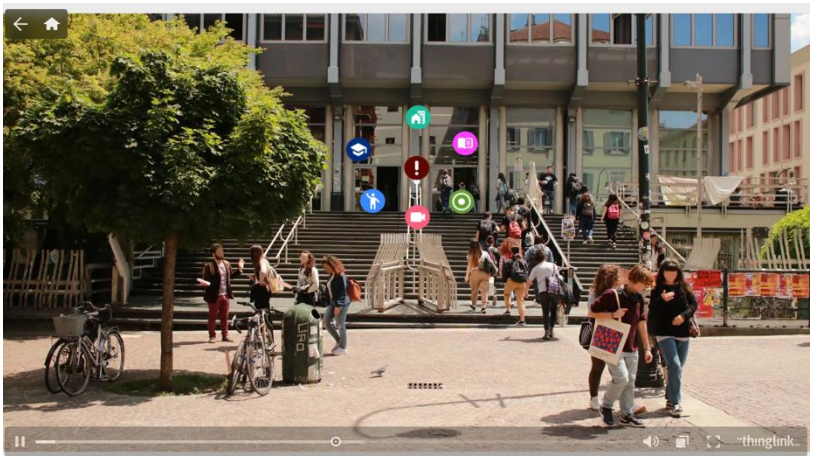

Figure 2. Insertion of icons aimed at guiding accessible services and spaces

2.4 Expected Results

This research hopes to achieve the following results:

- Increase the visibility and attractiveness of the universities involved among domestic and international students.
- Engage and orient through a gamified virtual tour, providing the tools to locate classrooms, libraries, study rooms, and student-oriented services.
- Increase accessibility by enabling remote exploration of university spaces facilitating access to information.

3. CONCLUSION

Among the many experiments and projects conducted by museums (and others) during lockdowns around the world, it is evident that virtual tours represent a "format" of particular interest (Coates, 2020; Khalel, 2020). The combination of real and virtual, physical and simulated, presence and distance, will accompany our consumption habits for a long time, which is why virtual tours play a driving role in diversifying cultural institutions' proposals (Vilardo & Mazali, 2022). Using new tools and the openness to digital languages lead to a positive disruption, increasing offerings and integrating traditional values and practices with new forms of valorization (Giannini, Bowen 2019). Cost is a limiting factor in the continuation of this path taken, both in terms of the technologies themselves and the need to employ specialized personnel to put (and maintain) them in operation. Despite these difficulties, the importance of harnessing digital to rethink the offerings that institutions cherish and enhance creatively should be highlighted. Literature (Dragoni, 2017) highlights how the gamified virtual tour experience can maximize engagement, experience, and learning effectiveness. Starting in December, the tour will be piloted by department students, disseminated on the University network, and with the support of faculty. In this way, data can be collected from questionnaires providing a wide range of how the tour can be further enhanced and what tangible benefits it brings to students and academic institutions.

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